GENETICALLY MODIFIED CROPS AND FOOD

Issue

What is the government doing to ensure GM crops and food are safe?

Key Message

The national framework for management and regulation of GM crops and food, includes careful scientific assessment of human health and environmental risks.

Economic and marketing considerations such as coexistence and segregation in agricultural supply chains are addressed through state specific requirements and industry protocols. Hence decisions on whether to allow genetically modified crop production in part or all of a state or territory are a matter for that jurisdiction.

GENE TECHNOLOGY REGULATION

Detailed questions on the regulation of genetically modified organisms (GMOs) and genetically modified (GM) foods should be referred to the Department of Health and Ageing.

The regulation of GMOs and GM food in Australia is achieved through an integrated legislative framework which includes the Gene Technology Regulator (the Regulator) and Food Standards Australia New Zealand (FSANZ) and corresponding state and territory legislation.

Dealings with live and viable GMOs are regulated under the *Gene Technology Act 2000*. The object of the Act is: "to protect the health and safety of people, and to protect the environment, by identifying risks posed by or as a result of gene technology, and by managing those risks through regulating certain dealings with GMOs". The intentional release of a GMO into the Australian environment such as commercial release of a GM crop, must be licensed by the Regulator. Commercial release is only licensed if any risks can be managed so as to protect the health and safety of people and the environment.

Assessment of GMOs intended for release into the environment involves analysis of data supplied by the applicant (e.g. Monsanto, CSIRO) and a comprehensive review by the Regulator of independent, peer reviewed scientific literature.

It is important to distinguish between the operation of the Gene Technology Act, which deals with risks to human health and the environment, and state-specific requirements or industry protocols, to address economic and marketing considerations such as coexistence and segregation in agricultural supply chains. Decisions on whether to allow genetically modified crop production in part or all of a state or territory are a matter for that jurisdiction.

An independent statutory review of the operation of the Act was conducted in 2005-06. The Review Panel concluded that the regulatory system had been functioning effectively, the Act had been rigorously implemented with a high level of transparency, and the current scope should be maintained. The Australian and all state and territory governments endorsed these findings. The Statutory Review recommended that the Act should be reviewed every five years. Consistent with these legislative requirements, the Department of Health and Ageing is currently conducting a review of the Act to ensure that it continues to accommodate emerging trends. Public submissions for this review closed on 14 June 2011. The Department of Health and Ageing is finalising the review report and once it is published will coordinate development of an Australian Government response.

GM foods are regulated under Standard 1.5.2 – Food produced using Gene Technology, contained in the *Australia New Zealand Food Standards Code*. This standard ensures that GM foods cannot enter the food supply unless they have been assessed by FSANZ as safe for human consumption. To allow consumers to make an informed choice, the standard also requires that human food derived from GM crops must be labelled as GM if any genetic material and/or protein other than that normally present in the food is contained in the final product.

The Council of Australian Governments (COAG) and the Australia and New Zealand Food Regulation Ministerial Council (Ministerial Council) commissioned a comprehensive review of food labelling law and policy. The Review Panel, headed by former Australian Health Minister, Dr Neal Blewett AC, presented its final report to the Ministerial Council on 28 January 2011. The Final Report–*Labelling Logic*– was publicly released on the same day and is available at:
www.foodlabellingreview.gov.au

With regard to genetically modified foods, the Panel endorsed the exemption from labelling of foods or ingredients that have no altered characteristics or no detectable novel DNA or protein and the exemption for adventitious presence but recommended follow-up and monitoring of any adventitious event, and the provision of adequate laboratories, resources and skills for this and other tasks. The Panel did not support the present exemption for flavours or the exclusion for chain food service outlets and vending machines from the requirement to declare GM foods or ingredients.

The Ministerial Council has indicated that a realistic timeframe to consider a response is December 2011.

GM CROPS IN AUSTRALIA

To date the Regulator has approved the commercial release of several varieties of cotton, canola, carnations and a rose; and has issued licences for field trials of crops as diverse as banana, sugarcane, wheat and barley, pineapple, papaya, white clover and grapevines, as well as the ornamental plant, torenia.

Varieties of GM cotton have been grown in Australia since 1996 and now comprise around 95 per cent of the Australian cotton crop. According to Cotton Australia, the introduction of biotechnology has seen a 90 per cent reduction in the application of pesticides to cotton crops. The ABARES commodity outlook for the September quarter forecast the volume of cotton production will almost double in the 2011-12 season, with the value of cotton exports to increase by 63 per cent.

Agrifood Awareness Australia reports that in 2010 around 133,300 hectares of GM canola were planted in NSW (24,040 ha), Victoria (36,500 ha) and Western Australia (72,800 ha). This represents around 9 per cent of the total canola crop in Australia. The volume of canola production is expected to increase by 7.4 per cent in the 2011-12 season.

State Moratoria

In 2003, the Gene Technology Regulator issued licenses for the commercial release of 'InVigor' and 'Roundup Ready' canola after examining their health and environmental impacts and determining these varieties were as safe as conventional canola. Subsequently, all states and territories, except Queensland and the Northern Territory, enacted GM crop moratorium legislation to delay the commercial production of approved

GM canola until marketing and trade considerations had been addressed. Most states have now reviewed, or are in the process of reviewing, the need for a moratorium.

South Australia has a moratorium on GM food crops which will expire in 2019. GM crops in South Australia are regulated under the *Genetically Modified Crops Management Act 2004* (SA). Pursuant to the *Genetically Modified Crops Management (Designation of Areas) Regulations 2004* (SA) a prohibition was placed on the cultivation of all types of GM food crops. On 28 April 2008 the Regulations, which designated the whole of the State as an area in which no GM food crops may be cultivated, were extended indefinitely. Under the *Subordinate Legislation Act 1978* (SA) these regulations will expire in 2019 unless reviewed earlier.

Tasmania was declared a GMO-free area pursuant to the *Genetically Modified Organisms Control Act 2004* (Tas). The Tasmanian cabinet announced in November 2008 that the state's moratorium on GM food crops would continue until November 2014.

In Western Australia, the *Genetically Modified Crops Free Areas Act 2003* (WA) prohibits the cultivation of all commercial GM crops in the state unless exemption orders have been issued. In 2009 the WA government allowed a commercial trial of GM canola. Following the trial, on 25 January 2010 the WA government announced an exemption to allow GM canola to be grown in WA from 2010 onwards. This follows the government's decision in November 2008 to lift its moratorium on growing GM cotton in the Ord River Irrigation Area. Exemption orders under the Act have also been issued for scientific research and field trials of other GM crops.

The New South Wales Parliament passed the *Gene Technology (New South Wales) Act 2003* and the *Gene Technology (GM Crop Moratorium) Act 2003* (NSW) to prohibit the production of specified GM food crops. On 14 March 2008 the NSW Primary Industries Minister announced approval had been granted for GM canola to be grown commercially in NSW after being satisfied that industry had adequately identified the requirements of key markets and can segregate GM product if required. The moratorium remains in place for the commercial production of all other GM food crops in NSW until 2021.

In 2004, Victoria introduced an order under the *Control of Genetically Modified Crops Act 2004* (Vic) to prohibit the production of GM canola. Following a review, Victoria's moratorium order on the commercial cultivation of GM canola was allowed to lapse on 29 February 2008, enabling production of GM canola from the 2008 growing season. The default position in Victoria is that all federally approved GM food crops may be immediately commercially released unless an order prohibiting their cultivation is made under the Act.

The Australian Capital Territory, which is regulated by the *Gene Technology Act 2003* (ACT) and the *Gene Technology (GM Crop Moratorium) Act 2004* (ACT), prohibited the growing of commercial GM food crops until June 2006. In April 2008 the ACT introduced the *Gene Technology Amendment Act 2008* (ACT) which made amendments to the regulatory system to bring it in line with NSW. Under the current legislation, it is an offence to deal with a GMO unless that product has been granted a GMO licence.

GM Canola: Segregation and Coexistence

The grains industry believes it has the capacity to manage the commercialisation of GM canola to maintain or enhance trade in Australian canola and to enable market choice along the supply chain. Farmers make commercial decisions, including to operate

organically or to grow non-GM or GM crops. Farmers seeking to capture a premium may incur additional costs.

Growers are required by Monsanto to undertake stewardship training before they can purchase seed. Objectives of the stewardship training include optimising agronomic performance, managing on-farm segregation and managing herbicide resistance.

A joint report was prepared by Grain Trade Australia and the Australian Oilseed Federation, *Market Choice in the Canola Industry – 2009/10 Season Performance Report*, outlining how the GM canola supply chain performed within the industry's market choice (coexistence) framework in the 2009-10 season. The framework includes identification of market requirements, establishment of adventitious presence threshold levels; and having supply chain processes in place to meet market requirements including segregation protocols. Industry is using buffer zones to assist with segregation of GM and non-GM crops, and has produced guidelines for clean-down of harvesting equipment. The performance report indicated that the market choice protocols adopted by industry in 2009 were effective and no revision of the protocols was required. A 2009-10 Season Performance Report has since been published on the Australian Oilseed Federation and a report on the 2010-11 season is being finalised.

The Australian canola industry has historically had one grade of canola. Following the lifting of restrictions on the commercial production of GM canola in NSW and Victoria, the Australian Oilseeds Federation and Grain Trade Australia introduced a second 'specialty' standard for non-GM canola (CSO1-A). The non-GM CSO1-A canola may contain up to 0.9 per cent adventitious presence of material from licensed GM crops. The general standard (CSO1) may contain licensed GM and/or conventional canola. Canola has been segregated and marketed in line with the two canola standards since the 2009 season.

Presence of genetically modified canola on an organic farm

A farmer in Western Australia, Mr Steve Marsh, is reported to have had around 70 per cent of his farm lose its organic certification as a result of GM canola blowing in from a neighbouring property, over 1 kilometre away. Mr Marsh is reported to grow wheat and oats. The neighbouring GM canola grower, Mr Michael Baxter, is reported in the press to have complied with his Monsanto License and Stewardship Agreement; and with industry protocols (such as establishing appropriate buffer zones).

Media reports indicate that Mr Marsh instructed his lawyers to lodge a writ in August 2011 in the West Australian Supreme Court against Mr Baxter. The writ alleges Mr Baxter was negligent in allowing GM to blow onto the Marsh property. Reports also indicate the Pastoralists and Graziers Association of WA would provide support to Mr Baxter and that Gene Ethics and the Network of Concerned Farmers had pledged support for Mr Marsh. Safe Food Australia will be garnering financial support for Mr Marsh. Mr Marsh's lawyer, Mr Richard Huston, is reported to have stated that damages could be substantial, resulting in the case going to the Supreme Court. ABC online reports Monsanto will not financially support any legal action in this case and has reiterated that it does not pursue farmers in relation to accidental presence of GM canola.

Seed spillage of GM canola in WA

On 11 August 2011, about 15 tonnes of Roundup Ready GM canola was spilt near the West Australian town of Williams when a truck caught fire on the Albany Highway. The site of the accident is 100 km north of the organic farm involved in the legal dispute over

GM contamination, and is within a zone of 12 grain growers who have declared themselves 'GM-free'. The grain handler CBH has advised that the canola seed, gravel and top soil from the surrounding area has been removed and they will work with the West Australian Government to monitor the site to mitigate any risk of contamination. Media reports indicate that the West Australian Government will monitor the site for up to eight weeks from the time of the spill. Roundup Ready canola can be controlled as it is not resistant to other herbicides used for control of broad leaf weeds. Gene ethics reports that the seed from the spill is germinating and parrots have been feeding on the seed.

Legislation and Regulation

Greenpeace has proposed the Commonwealth implement 'Farmer Protection (GM contamination) Legislation' to enable farmers to recover for any loss or harm caused by the presence of genetically modified organisms in their crops, harvest or on their land.

The debate regarding liability associated with genetically modified crops in Australia is not new. During development of the Gene Technology Bill 2000, submissions were received from interested parties, including the Organic Federation of Australia, seeking the imposition of strict liability for damage caused by genetically modified organisms; and also seeking that compensation be established to protect victims of genetic contamination.

A Statutory Review of the *Gene Technology Act 2000* was conducted in 2005. The review concluded that the object of the Act (to protect the environment and health and safety of people, by identifying risks posed by gene technology, and by managing those risks through regulation), was being achieved. The review considered issues such as strict liability for contamination and concluded that specific provisions should not be introduced on strict liability, compensation funds, mandatory insurance and third party appeals.

State reviews of genetically modified crop legislation concluded that liability concerns can be adequately dealt with through common law and consumer protection legislation and therefore there is no need for additional liability measures to be put in place.

Decisions on whether to allow genetically modified crop production in part or all of a state or territory are a matter for that jurisdiction. Containment, coexistence and segregation are also managed through state-specific requirements, combined with industry protocols.

GM Canola: Marketing Issues

ABARES research indicates concerns about markets and prices for GM canola are largely unfounded and that Australian growers could lose significant market share if their access to GM technology is restricted. There is no credible evidence that international and domestic markets will be put at risk if Australia grows GM canola. In the traditional export markets for canola – Japan, Mexico, China, Pakistan and Bangladesh – GM canola is generally accepted as readily as non-GM varieties. ABARES analysis indicates there has been no consistent premium paid for Australian non-GM canola once transport charges have been taken into consideration.

Future Australian exports of GM 'Roundup Ready' and 'InVigor' canola to the European Union are unlikely to face impediments as these varieties have been approved for food and feed (though not for cultivation) by the European Commission. Barriers affecting Canadian GM canola grain and meal exports to the European Union have arisen because, unlike Australia, Canada grows a number of GM canola varieties not approved by the European Union. In the three years to 2005, over 94 per cent of Australia's canola exports went to countries with labelling thresholds for unintended GM presence greater than

5 per cent. On 24 July 2011 the European Union (EU) adopted legislation allowing for 0.1 per cent of GM material that is unapproved in the EU but approved in the country of export, to be present in imports of animal feed.

Organics

The ABARE report *Potential impacts from the introduction of GM canola on organic farming in Australia* (2007) notes that organic canola is not grown to any significant extent in Australia; organic livestock producers can continue to use organic feedstuffs other than canola meal; and organic honey is not permitted to be produced from either GM or conventionally farmed non-GM canola. In the European Union, certified organic products may contain up to 0.9 per cent by weight of unintended GM presence before losing their certified organic status.

A national standard for organic produce, *AS 6000-2009 Organic and biodynamic products*, developed under the auspices of Standards Australia, was finalised in 2009. Under the standard, products or by-products that are derived from gene technology are not compatible with the principles of organic and biodynamic agriculture.

There are a number of organic standards used by certifiers in Australia for domestic certification. The Australian organic industry has an in principle objection to the use of genetic modification and this is reflected in the various organics standards.

Herbicide tolerance through conventional breeding

Herbicide tolerant canola has been bred conventionally, for example triazine tolerant (TT) canola. However, GM breeding techniques offer increased speed and flexibility introducing new traits. TT canola has been widely adopted in Australia despite inherently lower yield potential and oil content, associated with photosynthetic capacity. Emergence of herbicide tolerant weeds is often cited as an issue with GM canola, however it applies equally to conventionally bred herbicide resistant canola.

GM wheat

In July 2011 Greenpeace Australia Pacific released *Australia's wheat scandal*, a report calling for government to ban field trials of GM wheat. Greenpeace maintain that GM wheat is unsafe, uneconomical and that trials could contaminate the food supply. Greenpeace also stated that CSIRO would be commercialising GM wheat in the next two years, with GM wheat products to be present in the food chain by 2015. The government has not publically responded to the Greenpeace reports. However many of the claims made by Greenpeace against GM wheat have since been contested by industry experts and the scientific community. Two Greenpeace activists have been charged in relation to vandalism causing damage valued at $300,000 to a GM wheat trial crop on a CSIRO site in Canberra on 14 July 2011.

GM wheat is not grown commercially in Australia nor have there been any applications submitted to the Regulator to grow GM wheat commercially. GM wheat is not commercially grown anywhere in the world. However, since 2005 the Regulator has approved 11 small scale GM wheat research trials after conducting a rigorous science-based risk assessment and extensive consultation. These licences have been issued to the University of Adelaide, CSIRO and the Victoria Department of Primary Industries.

The trials approved in Australia are for research purposes only and are subject to strict containment conditions, including a requirement to monitor the trial sites after harvest and destroy any remaining material. There has been no breach of containment for any GM

wheat trials and wheat from these trials cannot enter the human or animal food supplies. Each trial is limited in size and duration and current licences have established trial sites ranging in size from 0.1 to 2 hectares per year for up to five years.

CSIRO's work in GM wheat and barley is primarily directed at increasing yield, reducing fertiliser use (impacting positively on greenhouse gas emissions) and enhancing health benefits (higher resistant starch), all traits that can contribute to sustainable food supply. This particular research does not involve inserting genes from one organism into another, rather existing genes are "silenced" or "turned off" in the plant to encourage or halt the trait under consideration.

CSIRO has permission (under the vandalised trial license DIR 093) to conduct controlled nutritional trials in animals and humans with GM wheat modified to have improved nutritional properties. Before commercialisation is possible, GM wheat will continue to undergo rigorous scientific analysis and commercial testing and it is expected commercialisation is seven to 10 years away.

The department is responding to a freedom of information request from Greenpeace asking for documents the department holds pertaining to the development of drought and salinity tolerant GM wheat. International trading partners have also sought information of the department, to confirm Australia is not growing GM wheat commercially and that Australia's non-GM exports are free from any contamination with GM.

On 15 May 2009 grain industry organisations from the United States, Canada and Australia released a joint statement on 'wheat biotechnology commercialization'. The Australian organisations were the Grains Council of Australia, Grain Growers Association and the Pastoralists and Graziers Association of Western Australia. The statement supported the use of biotechnology in developing improved wheat varieties and noted that the signatory organisations will work toward the goal of synchronised commercialisation of biotech traits in wheat in order to minimise market disruption.

GM FOOD IN AUSTRALIA

Food Safety Assessment and Labelling

All GM foods intended for sale in Australia and New Zealand are subject to a pre-market safety assessment by Food Standards Australia New Zealand (FSANZ) and approval by the FSANZ Board. The Australia and New Zealand Food Regulation Ministerial Council is then notified of the Board's decision. Gazettal occurs in the *Australia New Zealand Food Standards Code* (the Code). More than 40 GM foods have been approved to date.

FSANZ carries out safety assessments on a case-by-case basis, which means each new genetic modification is assessed individually for its potential impact on the safety of the food. FSANZ compares the GM food with a similar, commonly eaten non-GM food from a molecular, toxicological, nutritional and compositional point of view. If the genetic modification causes an adverse effect in the food, such as increasing its allergenicity or toxicity, it will not be approved. The safety assessment protocol used by FSANZ for GM foods is based on internationally recognised principles for assessing the safety of whole foods.

The Code also requires that food (including ingredients, food additives and processing aids) derived from GM crops be labelled as GM if any genetic material and/or protein other than that normally present in the food is contained in the final product. Highly refined foods such as oils and sugars, that do not normally contain any genetic material or

protein, may require labelling if they possess characteristics that are significantly altered from the non-GM counterpart. This labelling requirement ensures consumers are advised where there is GM content and can make informed choices.

The Code allows a food to contain up to 10g/kg (1 per cent) unintended new genetic material and/or protein per ingredient without being labelled but only where the manufacturer has actively sought to avoid using GM food or ingredients, and only where the unintended GM material has been approved for food use by FSANZ. In addition, food prepared for immediate consumption, for example at restaurants and through vending machines, is not required to be labelled.

Truth in Labelling Bill

In November 2010 Independent Senator Nick Xenophon and Australian Greens Senator Rachel Siewert introduced a Bill to the upper house calling for an overhaul of food labelling standards. Under the Food Standards Amendment (Truth in Labelling - Genetically Modified Material) Bill 2010 FSANZ would have to introduce a standard to require producers, manufacturers and distributors of food containing genetically modified material to list that material as an ingredient of the food on the food's label, irrespective of the amount or how it came to be present. FSANZ would also be required to establish due diligence guidelines for products which claimed to be GM free.

The Senate referred the Bill to the Senate Community Affairs Committee for inquiry and report. Fifteen submissions were received, and two public hearings held in April. The Committee's report was released on 24 August 2011. In its report, the Committee considered that the current labelling system for GM foods provides adequate information for consumers provided there is active compliance testing. It also noted that the Bill is likely to have the unintended effect of increasing costs for those producing GM-free products. For these reasons, the Committee recommended that the Bill not be passed.

NATIONAL ENABLING TECHNOLOGIES STRATEGY

The Australian Government has provided $38.2 million over four years (2009-2013) to a National Enabling Technologies Strategy to support the responsible development of enabling technologies, focusing primarily on biotechnology and nanotechnologies. The Department of Innovation, Industry, Science and Research is the lead agency. The Strategy's aim is to improve the management and regulation of biotechnology and nanotechnology in order to maximise community confidence and community benefits from the use of new technologies.

In 2010 the department was provided with $175,000 under the Strategy to investigate the role of enabling technologies, including biotechnology, in addressing food security and sustainability issues in the agriculture sector. ABARES was commissioned to undertake this work and a draft report has been provided to Agricultural Productivity Division for consideration. It is anticipated a final report will be provided later in 2011.

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